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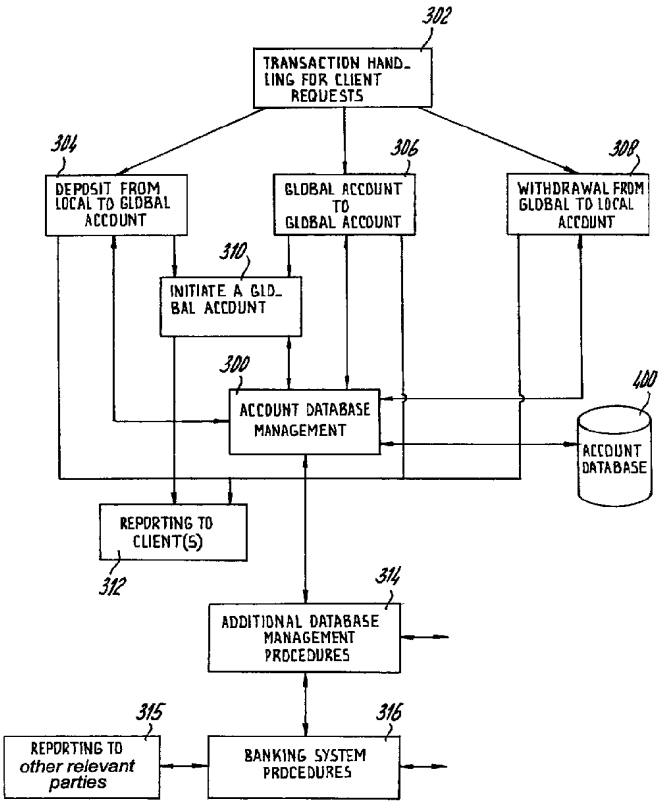
(54) Title: ARRANGEMENT AND METHOD FOR A WORLD WIDE PAYMENT SYSTEM ON INTERNET



(57) Abstract: A server arrangement (8) connected to a network (1), comprising processing means (21) and memory means (18-22) connected to the processing means (21), the memory means (18-22) comprising a plurality of records (401), each record (401) being associated with a client and containing at least the following fields: a first data field (402) to identify the record (401); a second data field (410) representing a financial account value; a third data field (404) to identify a client related to the record (401); a fourth data field (406) to identify an external account for the client associated with the third data field (404); the third data field comprising data related to an e-mail address of said client.

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— *with amended claims*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Arrangement and method for a world wide payment system on Internet.

Field of invention

The present invention relates to a server arrangement as defined in the outset of claim 1.

Prior art

As a world-wide network for data communication, the Internet is available to many people in most parts of the world. Access to most of its facilities is easy, especially because of web browser programs for entrance to the part of the Internet known as the World Wide Web. Over recent years, a global society has been forming of virtual communities that transgress geographical borders.

Also, due to the wide range of opportunities for business applications on the World Wide Web, the importance of the Internet in commercial activities is rapidly increasing. Many commercial activities require the presence of adequate financial transaction facilities on the Internet in order to do business. Commodities, products, and services (of whatever kind) are traded in exchange for payment: money is transferred from one party to another. Until now, methods of payment have not been properly implemented yet for application on the Internet. All existing ways of payment on the Internet originate from the conventional methods for payment in the financial business: credit cards, debit cards, local electronic banking applications and bank-to-bank transfers. However, since the Internet is a global network, most of these conventional methods are not efficient. For example, some methods are only effective locally because of the use of local currencies. Other methods are expensive due to service rates and transaction costs (e.g., credit cards and debit cards). Moreover, some payment methods require a special network device or a difficult clearing process. Also, the Internet is principally an open network, where security of data traffic (and transactions) is obviously limited.

It is an object of the present invention to provide a system for payments on the Internet, which is free of transaction costs for the user, has a potentially low threshold for global acceptance, and is simpler than the methods known from prior art. In one preferred embodiment, the present invention provides a method that facilitates secure

payments on the Internet, using (prior art) encryption methods. Also, in a preferred embodiment the present invention encompasses a method to enhance a rapid world-wide acceptance of this method of payment and to stimulate transactions according to this method of payment. Moreover, in one embodiment the present invention provides a method for profit sharing to users who participate in the system of payments by the method of the present invention.

Summary of the invention

The present invention relates to a server arrangement connected to a network, comprising processing means and memory means connected to the processing means, the memory means comprising a plurality of records, each record being associated with a client and containing at least the following fields:

- a first data field to identify the record;
- a second data field representing a financial account value;
- a third data field to identify a client related to the record;
- a fourth data field to identify an external account for the client associated with the third data field;

the third data field comprising data related to an e-mail address of said client.

The present invention also relates to a server arrangement as defined above, wherein the processor means are arranged to carry out the following steps:

- to receive via the network a message from a first client having a first electronic mail address;
- to select a first client record based on the received first electronic mail address;
- to withdraw a money value from the financial account value of the first client record's second data field, the money value being specified in the message;
- to transfer the money value to a second client account as specified in the message.

Moreover, the present invention relates to a server arrangement as defined above wherein the message specifies that the second client account is related to a second client electronic mail address as defined in a second client record's third data field.

Alternatively, the message may specify that the second client account is an external bank account of the first client at a local bank. Then, the present invention

relates to a server arrangement as defined above, wherein the message specifies that the second client account is a bank account for the first client.

Also, the second client account may not exist yet and must be created before money can be transferred.

Therefore, the present invention relates also to a server arrangement as defined above, wherein the message specifies that the second client account is related to a second client electronic mail address which is not yet related to one of the records, and the processing means are arranged to automatically create a second client record and transfer said money value to the second client record's second data field.

Also, the present invention relates to a server arrangement as defined above, wherein the processing means are arranged to automatically create the first client record if it does not yet exist.

Furthermore, the present invention relates to a data structure for storing data in memory means of a server arrangement comprising a plurality of records, each record being associated with a client and containing at least the following fields:

- a first data field to identify the record;
- a second data field representing a financial account value;
- a third data field to identify a client related to the record;
- a fourth data field to identify an external account for the client associated with the third data field;

the third data field comprising data related to an e-mail address of said client.

Moreover, the present invention relates to a method to be carried out by a server arrangement connected to a network, comprising processing means and memory means connected to the processing means; to store in the memory means a plurality of records, each record being associated with a client and containing at least the following fields:

- a first data field to identify the record;
- a second data field representing a financial account value;
- a third data field to identify a client related to the record;
- a fourth data field to identify an external account for the client associated with the third data field;

the third data field comprising data related to an e-mail address of said client, including the following steps:

- to receive via the network a message from a first client having a first electronic mail address;
- to select a first client record based on the received first electronic mail address;
- to withdraw a money value from the financial account value of the first client record's second data field, the money value being specified in the message;
- to transfer the money value to a second client account as specified in the message.

The present invention also relates to method as defined above, characterised by the following step:
to identify the second client account as a record with a third data field relating to a second electronic mail address of a second client as stored in the predefined message

Alternatively, the specified second account may be an external account of the first client at a local bank. Then, the present invention relates also to a method as defined above, characterised by the following step:
to identify the second client account as a record with a fourth data field relating to an external account of the first client at a local bank as stored in the predefined message.

Also, the second client account may not exist yet. Therefore, the present invention further relates to a method as defined above, characterised by the following step:

- to identify that the second client account is related to a second client electronic mail address which is not yet related to one of the records,
- to automatically create a second client record and
- to transfer the money value to the second client record's second data field.

The present invention also relates to a computer program product to be loaded by a server arrangement connected to a network, comprising processing means and memory means connected to the processing means, after being loaded allowing the server arrangement to store in the memory means a plurality of records, each record being associated with a client and containing at least the following fields:

- a first data field to identify the record;
- a second data field representing a financial account value;
- a third data field to identify a client related to the record;
- a fourth data field to identify an external account for the client associated with the third data field;

the third data field comprising data related to an e-mail address of the client.and allowing the server arrangement to carry out the following steps:

- to receive via the network a message from a first client having a first electronic mail address;
- to select a first client record based on the received first electronic mail address;
- to withdraw a money value from the financial account value of the first client record's second data field, the money value being specified in the message;
- to transfer the money value to a second client account as specified in the message.

Furthermore, the present invention relates to a data carrier provided with a computer program product as defined above.

Finally, the present invention relates to a method of payment including the steps of:

- sending a message to a server via a network;
- withdrawing a money value from a financial account value of a first client account, said money value being specified in said message;
- transferring said money value to a second client account as specified in said message,

at least said first client account being identified by data related to an e-mail address of said first client.

Brief description of the drawings

Below, the invention will be explained with reference to some drawings, which are intended for illustration purposes only and not to limit the scope of protection as defined in the accompanying claims.

Figure 1 shows an organisation chart of an exemplary world-wide payment system on the Internet, in which the present invention is used;

Figure 2 shows a general overview of a network system to illustrate the invention;

Figure 3 shows a schematic block diagram of a server system of this invention;

Figure 4 shows a schematic block diagram of processes performed by the server system of this invention to maintain client accounts in the database stored on the server system;

Figure 5 shows a schematic overview of an arrangement of a client account record stored in the database on the server system;

Figure 6 shows a block diagram for client requested transaction handling by the server system;

Figure 7 shows a block diagram for transferring money between account records stored at the server system of this invention;

Figure 8 shows a block diagram for the server system to deposit money on an account stored in the account database of the server system of this invention;

Figure 9 shows a block diagram for the server system to withdraw money from a client account to the back-to-back account of that client at a local bank.

Description of the preferred embodiment

The present invention provides an arrangement and method for a server system for payments on the Internet.

Figure 1 shows an organisation chart of an exemplary world-wide payment system on the Internet, in which the present invention is used. Here, the world-wide payment system on the Internet in which the present invention is used, will be briefly explained. The world-wide payment system on the Internet as supported by the present invention, comprises a plurality of entities and functions which are interconnected.

A client having an account on the world-wide payment system and represented by his computer 101 is connected to a global central payment and account computer 102 by means of an e-mail protocol interface 103 based on predefined e-mail messages. The global central payment and account system 102 is linked to regional representative banking systems 104 (one being shown in Figure 1), which each comprise a local central account system 105 and a regional banking management system 106. The global payment and account system 102 is also linked to a global quotation management system 107. The global quotation management system 107 has links to an investment management system 108 and a real-world currency quotation system 109.

The central payment and account system 102 controls all payments and accounts of clients on a world-wide scale. All payments and accounts use a virtual currency to simplify transaction between parties.

Through the central payment and account system 102, clients can do payments to other clients of the same system 102. To do so, a client sends a predefined e-mail containing all necessary transaction information to the e-mail protocol interface 103 which translates the transaction data in the e-mail message into commands for the central payment and account system 102.

Before a client can pay to other clients, the client must open an account. To initiate an account, the client makes a money deposit 110 (in a way known from the prior art) in the regional representative banking system 104 in the region where the client lives. The money deposit is transferred to the local central account system 105 which holds all money transferred by clients living in the operational region of the specific regional representative banking system 104. Now, the global account for the client is opened by an electronic transaction message 111 from the regional representative banking system 104 to the central payment and account system 102.

Similarly, a client can withdraw money from his account by issuing a predefined e-mail message to the global payment and account system 102. The global payment and account system 102 reduces the balance on the virtual currency account and sends a transaction message to the regional representative banking system 104, which actually does a money transfer to the client using, preferably, the currency of the client's residential region.

Preferably, the server system of the present invention uses a virtual currency for all payments within the account system, since the system provides a world-wide account system. All global accounts have a balance, expressed in units of the virtual currency. Advantageously, the use of a virtual currency provides a world-wide transparency of price levels for all transactions. For external transactions the virtual currency has a quotation related to currencies in the known currency system. Each client debit account is linked to an existing "back-to-back" account for that particular client at a local bank. The link to the "back-to-back" account provides additional security and identification of clients in the world-wide payment system on the Internet (WWPSI).

In the server system of the present invention payments can be made to anyone with a valid existent e-mail address. If the payee does not have a global account within the banking system, the server system will create such a global account on behalf of the payee, and inform the payee accordingly through his e-mail address. Also, the server

system will ask the payee to provide additional information on an existing "back-to-back" account at a local bank, etc. in order to make the account more secure. Moreover, an individual that desires to open an account in the banking system of the present invention, can initiate the creation of an account by transferring money from his existing "back-to-back" account on an intermediate account of the WWPSI at a regional representative banking system. In the transfer order, the individual must specify his e-mail address to have a global account created in his name.

All transactions between clients are carried out using the virtual currency accounts of clients in the central payment and account system 102. Due to possible flux of capital between regions, the regional representative banking systems can exchange money between them to balance with the total amount of the virtual currency in each region by means of a money transfer function. In this way, the conventional transfer of real currencies is advantageously handled by the regional representative banks that each operate within a regional banking system.

Moreover, the banking system supported by the present invention provides payments within the banking system that will be free of costs to clients. To cover costs, the money deposited in the regional banks, will be invested in a type of mutual fund (restricted by applicable local laws). Within the regional representative banking systems 104, investments can be made as known in the art by means of the investment management system 108 which can use the money deposited in the regional representative banking systems 104 to that extent by means of a money transfer 112.

Furthermore, to encourage payments by means of this system, the banking system supported by the present invention may provide a profit sharing method for clients that keep money in their virtual currency account. Also, the server system may provide this method by a periodical change of the exchange rate of the virtual currency, due to profits made by a mutual fund investment business. The investment management system 108 exchanges information based on the investment results with the global quotation management system 107, to account for possible profits (minus costs), which are thus preferably expressed in the exchange rate of the virtual currency. Also, the fluctuations of the real-world currencies are related to the virtual currency used in the global payment and account system 102 by the real-world currency quotation system 109.

The present invention offers a possibility to open an account for a new client by simply allowing a payment transaction by an existing client to a yet non-existent client. In this manner, the present invention advantageously reduces the obstacles and annoyances for transferring money between two parties.

Parties involved in the transactions can be consumers as well as businesses. The world-wide payment system on the Internet preferably provides payment services for business-to-business, business-to-consumer, and consumer-to-consumer environments.

In Figure 2 a general overview of a network system is shown to illustrate the invention. A network for data-communication 1 is shown, on which a plurality of personal computers 2, 3, are connected by respective input/output (I/O) devices 4, 5. A server system 8 according to the present invention is linked to the network 1 by its I/O device 7. A plurality of server systems 9, 10 of regional representative banking system are also connected by their respective I/O devices 11 and 12.

The data-communication network 1 schematically depicts the world-wide data-communication network, known as the Internet. The network 1 comprises a plurality of interconnected networks, that may be the Public Switched Telephone Network (PSTN), or any other network suitable for data transmission. For instance such an interconnected network may be a Local Area Network (LAN), or a Wide Area Network (WAN).

Users of the server of the present invention can send electronic messages relating to payments to the server 8 from their personal computers 2, 3, through the network 1. In stead of (or, in addition to) personal computers, any other type of telecommunication unit capable of communicating with the server 8 through the network 1, like a mobile telephone arranged with a WAP (Wireless Application Protocol) or equivalent feature, may be provided.

Figure 3 shows a schematic block diagram of an example of a server system 8 of this invention, comprising host processor means 21 with peripherals. The host processor means 21 are connected to memory units 18, 19, 22, 23, 24 which store instructions and data, one or more reading units 30 (to read, e.g., floppy disks 17, CD ROM's 20, DVD's, etc.), a keyboard 26 and a mouse 27 as input devices, and as output devices, a monitor 28 and a printer 29. Other input devices, like a trackball and a touch screen, and output devices may be provided. An I/O device 7 is provided for data-communication over the network 1. The I/O device 7 is linked to network 1.

The memory units shown comprise RAM 22, (E)EPROM 23, ROM 24, tape unit 19, and hard disk 18. However, it should be understood that there may be provided more and/or other memory units known to persons skilled in the art. Moreover, one or more of them may be physically located remote from the processor means 21, if required. The processor means 21 are shown as one box, however, they may comprise several processing units functioning in parallel or controlled by one main processor, that may be located remotely from one another, as is known to persons skilled in the art.

On the Internet, clients of the server system 8 of the present invention, can pay other clients of the server system 8 via a debit account system that runs on the server system 8. Such a debit account system can be provided by a database system in combination with a front-end transaction handling system. In the present invention, the debit account system allows only payments smaller than or equal to the account balance to be done.

Clients send their payment orders as e-mail messages to the server system 8 through the network 1 as users of personal computers 2, 3. In accordance with the present invention, a client's global account is administered through the client's e-mail address. A client can request a specific financial transactions by sending a corresponding predefined e-mail message to the server system 8. In the server system of the present invention, financial transactions are restricted to payments. The predefined message can be formed in any suitable way known in the art, e.g., by using predefined keywords in the message. Authorisation of the message can be accomplished by any suitable mechanism known in the art, e.g., by using passwords or number codes. Also, the server system may provide an authorisation procedure which allows a client to confirm each payment order separately by an additional predefined e-mail message. Moreover, the message contains, in a predefined format, data that are related to the identity of the client, the identity of the payee, and the amount of the payment.

Figure 4 shows a schematic block diagram of processes handled by the server system of this invention to maintain a client's global accounts in the WWPSI database stored on the server system.

Related to a global account database 400 stored in memory, which contains records for all clients of the WWPSI, a number of processes can be carried out by the

server system: an account database management procedure 300, a transaction handling procedure for client requests 302, a procedure for depositing money from a client's "back-to-back" account to that client's WWPSI account 304, a procedure for money transfer between two client global accounts within the WWPSI 306, a procedure for withdrawing money from a client's WWPSI global account to his "back-to-back" account at a local bank 308, a procedure for initiation of a client's record in the account database 310. Further procedures comprise reporting procedures to clients 312, additional database management procedures 314, reporting procedures to other relevant parties 315, and procedures for banking-related database operations 316.

The account database management procedure 300 performs all requested database operations on the account database 400. Requests made by clients to do a specific transaction are handled through a transaction handling procedure for client requests 302. This procedure is driven by client e-mail messages received from the Internet. The transaction handling is restricted to payments by a client from his global account. Transactions procedures for the server are e.g.: the procedure for depositing money 304 from a client's "back-to-back" account to that client's WWPSI global account, the procedure for money transfer 306 between two client global accounts within the WWPSI, and the procedure to withdraw money 308 from a client's WWPSI global account to his "back-to-back" account at a local bank. Here, only these transaction procedures for payments are shown, but other possible procedures for payment transactions may be included as well.

These procedures, which the server system 8 uses to perform operations (through the account database management procedure 300) on client's records in the account database 400, will be described later.

Furthermore, in case of client requests through procedures 302 and/or 304, payments may be required to a global account, which is non-existent at that time. For instance, when a client wants to open account in the WWPSI, the server system, automatically, carries out a procedure 310 in which a client record is created in the account database.

After handling all transaction procedures 304, 306, 308, 310 as requested by clients, the server 8 will carry out a reporting procedure 312. In this procedure the server system creates an e-mail message for the client that requested the transaction and/or the client related to the target account of the transaction in case of procedure

306. Subsequently, the server 8 sends the e-mail message to the e-mail address of that client. The e-mail address is coupled to an e-mail application running at a personal computer 2, 3 in any conceivable manner as known from prior art.

Finally, the server system can process the client records in the account database 400 as required by further procedures for database management 314 and banking-related database operations 316. The database management procedures 314 handle the basic functions for data management in the account database 400 (i.e., not related to client requested transactions), as known from prior art. Also, such operations may be used for transaction logging purposes.

The banking-related database operations procedure 316 perform higher-level functions needed for information and account management. To this extent, separate banking databases may be provided (not shown). Also, the server system may use these functions for transaction management. As examples, the server system may need to reverse a transaction or to calculate the overall value of the accounts, the actual exchange rates between the system's virtual currency and real-world currencies, or the flux of capital between regions due to transactions in the WWPSI.

Additionally, the server 8 may carry out a reporting procedure to other relevant parties 315, e.g., to report information to the bank management, or as an example, generate a report for a country's central bank to indicate capital flow through the WWPSI, if requested.

The account database 400 comprises records of global accounts for a plurality of clients. Figure 5 shows a schematic overview of a single client global account record 401 stored in the account database 400 on the server system 8.

The client record 401 comprises a data field for a client ID 402, a data field for the client's e-mail address 404, a data field to store information regarding the client's "back-to-back" account at a local bank 406, a data field for internal codes 408, and a data field containing information on the global account's balance 410.

In the client ID data field 402 the identification of the client is stored, which may serve as an internal account identifier. In the e-mail address data field 404, the client's e-mail address is stored. The e-mail address is used for identification of the client in transaction requests, received by e-mail. The data field 406 contains information on the client's "back-to-back" account at a local bank, possibly a banking account number. The internal code data field 408 may contain codes needed for clearance, authorisation

and security. The data field 410 contains information on the balance of the client's global account.

It is to be understood that other data fields 414 may be provided in the client's global account record 401 for further required information. For instance, a data field may contain a client's address information, a client's preferred language, telephone or fax number, currency rates, marketing data, etc. Also, the record 401 may contain a data field 412 that holds information for linking additional data files on the server system 8 to the client's account record 401, e.g. a transaction history file for a client's global account.

Also, it is noted that the information in the data fields may be in any format acceptable for processing by the processing means 21 of the server system 8.

Figure 6 shows a block diagram for client requested transaction handling 302 by the server system.

The procedure 302 starts at the arrival of an e-mail message, presumably sent by a client of the WWPSI. In step 502, the message M is received by the server system 8 from the Internet and stored. The processing means 21 of server system 8 retrieve the sender's e-mail address from the message M.

In step 504, the processing means checks if the sender's e-mail address is identical to an e-mail address stored in one of the client account records 401 in the account database 400, preferably through a search function within database management procedure 314. If the sender's e-mail address is equal to a client's e-mail address (stored in data field 404 of a record 401), the procedure continues in step 508. If no match is found between sender's email address and a client's e-mail address, the procedure continues in step 506.

In step 506, the server system composes an e-mail message to be sent to the sender's e-mail address. The e-mail message contains a notification that the request in the requesting message M could not be handled, since the client is unknown to the server system. The message is sent to the e-mail address of the original sender through reporting procedure 312. Then the procedure ends in step 524.

In step 508, the client identification (CID) is set for the requesting e-mail message M.

In step 510, a further check is made to identify the message M as a predefined message related to a specific transaction, for example by checking for the presence of

keywords. If the message M is not identified as a predefined message, in step 512 the server system 8 composes an e-mail message to be sent to the e-mail address of the client identified by the client identification CID. The message contains a notification that the request in the requesting message M could not be handled, since the requesting message M is not known to the server system. The message is sent through reporting procedure 312. Then the procedure ends in step 524. If the message M contains a valid predefined message for a specific transaction, the procedure continues in step 514.

In step 514, the server system checks if the authorisation of the message M is valid. If the requesting message is not authorised, in step 516 the server system composes an e-mail message to be sent to the e-mail address of the client identified by CID. The message contains a notification that the request in the requesting message M could not be handled, since the authorisation procedure failed. The message is sent through reporting procedure 312. Then the procedure ends in step 524. If the message M passes the authorisation procedure, the procedure continues in step 518.

In step 518 the authorisation code for the transaction contained in message M is set.

Alternatively the procedures 514, 516, 518 may be replaced by a procedure (not shown) that requests the client CID to confirm his payment order in a separate e-mail message. This second e-mail message is then used to verify the payment order of the client.

In step 520, the server system 8 determines which specific transaction is requested. At this stage, the server system 8 may store all transaction related data in a record in a transaction database (not shown), which may be needed if a transaction needs to be cancelled or reversed. The transaction record may be identified in any way known in the art, e.g., by an unique transaction number TAN.

Subsequently, in step 522 the server system chooses by which method the requested transaction with the data contained in message M is to be processed, i.e. a payment from one client's global account to another client's global account, or a withdrawal of money from a client's global account to that client's "back-to-back" account at a local bank. The specific procedure is called by the processing means.

In step 524, the procedure ends. (The server system returns to the calling procedure.)

In Figures 7, 8, and 9 the transaction-related procedures to be processed by the server system of the present invention are explained in more detail. In Figures 7 and 8 the payment procedure from one client's global account to another client's global account, is illustrated. In Figure 9 the withdrawal of money from a client's global account to that client's "back-to-back" account at a local bank is illustrated.

Figure 7 shows a block diagram for the procedure to transfer money 306 between global account records stored at the server system of this invention.

In step 602, the data related to the transaction are entered by the calling procedure 522. The requested transaction T concerns an internal payment of a client, identified by CID and an authorisation code, to another global account of a payee.

In step 604, the e-mail address PID for the payee is determined from the requesting e-mail message M.

In step 612, the server system 8 determines the amount P to be paid for client CID to the payee PID. From the account database 400, the record 401 of the client CID is retrieved to obtain the balance B in data field 410 of the account. Preferably, the authorisation code from message M is used here for further verification of the transaction.

In step 614, it is checked if the balance B is adequate to do the payment P to payee PID. If the balance is too low, the procedure continues in step 616, in which the server system composes an e-mail message to inform the client CID that the balance B of his account is too low to do the payment. The message is sent to client CID through reporting procedure 312. The transaction procedure exits in step 624.

In case the financial resources allow payment, the procedure continues in step 618. Here the payment P is withdrawn from the global account of client CID. A new balance B-P is calculated and stored in data field 410 of the client account record 401 in the database 400.

In step 620, a payment procedure Q to transfer amount P from client CID to payee PID is called. This procedure will be described further with reference to Figure 8.

In step 622, the server system composes an e-mail message to client CID to confirm payment to payee PID, reporting both the amount paid P and the new balance B-P on the account of client CID.

The procedure ends in step 624. (The server system returns to the calling procedure.)

Figure 8 shows a block diagram for the server system to deposit money on a global account stored in the account database of the server system of this invention.

In step 702, the data related to the payment procedure are entered by the calling procedure 620. The requested transaction Q concerns an internal payment (amount P) from the global account of a client, identified by CID, to the global account of the payee identified by PID.

In step 704, the server system 8 compares the address PID with the addresses in the account database 400, to verify if an account exists for the payee with address PID. If the verification is positive, the procedure continues in step 708, else a new account for payee PID is created in step 706.

In step 706, a new account is created for payee PID which was already identified by his valid e-mail address. The server system 8 adds a new record 401 to the account database 400 for payee PID. All data fields in the record 401 are initialised to their default values. The server system composes an e-mail message to payee PID to announce the creation of the account within the banking system and to ask the payee to supply additional information to the system. Further, the message preferably contains an explanation why the account was created and how the banking system operates. The message is sent to payee PID through reporting procedure 312. The procedure now continues in step 708

In step 708, from the account database 400, the record 401 of the payee PID is retrieved to obtain the balance B2 in data field 410 of the account. The amount P paid by client CID is added to the balance. The new balance value B2+P is stored in the data field 410 of the record 401 of payee PID in the account database 400.

In step 710, the server system composes an e-mail message to payee PID to confirm payment from client CID, reporting both the amount paid P and the new balance B2+P on the account of payee PID.

In step 710, the server system may check that the e-mail message is actually delivered at the e-mail address of the payee PID. If the e-mail message to payee PID returns as undeliverable, the server system 8 will start a cancellation procedure (not shown) to reverse the transaction (which was identified in step 520 by transaction number TAN). Also, the check on delivery of e-mail messages may be executed by an

other procedure carried out by the server system 8, e.g. the banking-related database operations procedure 316.

The procedure ends in step 712. (The server system returns to the calling procedure.)

The initiation of a new global account by the server system 8 of the present invention will also be possible by means of a money transfer from a local bank account on behalf of a potential customer to a special intermediate bank account of the WWPSI at a regional representative bank. In the transfer order, the potential customer specifies his e-mail address to have a global account created in his name. The regional representative bank sends an electronic message to the server system 8 to create the new account expressed in virtual currency. The handling of such an account creation procedure by the server system 8 may follow a similar procedure as shown in Figure 8

Figure 9 shows a block diagram for the server system to withdraw money from a client's global account to the back-to-back account of that client at a local bank 308.

In step 802, the data related to the payment procedure are entered by the calling procedure 522. The requested transaction W concerns a withdrawal from an account at the WWPSI banking system by a client, identified by CID, to the "back-to-back" account of that client CID at a local bank.

In step 804, the server system 8 determines the amount P to be withdrawn.

In step 806, from the account database 400, the record 401 of the client CID is retrieved to obtain the balance B in data field 410 of the account. Also, the information on the "back-to-back" account at a local bank is retrieved from data field 406. Preferably, the authorisation code from message M is used here for further verification of the transaction.

In step 808, it is checked if the balance B is adequate to do the transfer of amount P (plus possible costs). Preferably, the authorisation code from message M is used here for further verification of the transaction.

If the balance is too low, the procedure continues in step 812, in which the server system composes an e-mail message to inform the client CID that the balance B of his account is too low to do the transfer. The message is sent to client CID through reporting procedure 312. The transaction procedure exits in step 820.

In step 810, the amount P, expressed in the virtual currency, is exchanged to an amount Px in the currency used at the local bank. From the "back-to-back" account the

actual currency for the withdrawal can be derived. Possible costs for exchange and transfer may be calculated. The exchange calculation procedure is carried out by the server system as known from methods of the prior art.

In case the financial resources allow payment, the procedure continues in step 814. Here the payment P (plus possible costs) is withdrawn from the account of client CID. A new balance B-P is calculated and stored in data field 410 of the client account record 401 in the database 400.

Since the real-world currencies, founding the virtual currency of the WWPSI, are preserved at the regional representative banks around the world, the server system 8 sets up the transfer from the intermediate banking account at the regional representative bank to the "back-to-back" account of client CID at a local bank in step 816. The server system sends an electronic message to the regional representative bank (i.e., acting in the region where the "back-to-back" account of client CID is located) to execute the withdrawal transaction on behalf of client CID to the local bank of client CID by means of a bank-to-bank transaction as known by persons skilled in the art.

In step 818, the server system composes an e-mail message to client CID to confirm money transfer to the "back-to-back" account of the client CID, reporting through procedure 312 the amount transferred (P and Px in virtual and local currency, respectively) and the new balance B-P on the account of client CID.

The procedure ends in step 820. (The server system returns to the calling procedure.)

Claims

1. A server arrangement (8) connected to a network (1), comprising processing means (21) and memory means (18-22) connected to the processing means (21), the memory means (18-22) comprising a plurality of records (401), each record (401) being associated with a client and containing at least the following fields:

- a first data field (402) to identify the record (401);
- a second data field (410) representing a financial account value;
- a third data field (404) to identify a client related to the record (401);
- a fourth data field (406) to identify an external account for the client associated with the third data field (404);

the third data field comprising data related to an e-mail address of said client.

2. A server arrangement according to claim 1, wherein said processor means (21) are arranged to carry out the following steps:

- to receive via the network (1) a message (M) from a first client having a first electronic mail address;
- to select a first client record (401) based on said received first electronic mail address;
- to withdraw a money value from the financial account value of said first client record's second data field (410), said money value being specified in said message (M);
- to transfer said money value to a second client account as specified in said message (M).

3. A server arrangement according to claim 2, wherein said message (M) specifies that said second client account is related to a second client electronic mail address as defined in a second client record's third data field (404).

4. A server arrangement according to claim 2, wherein said message (M) specifies that said second client account is a bank account for said first client.

5. A server arrangement according to claim 2, wherein said message (M) specifies that said second client account is related to a second client electronic mail address which is not yet related to one of said records (401), and said processing means are arranged to automatically create a second client record (401) and transfer said money value to said second client record's second data field (410).

6. A server arrangement according to any of the preceding claims, wherein said third data field's data equals said e-mail address of said client.

7. A data structure for storing data in memory means (18-22) of a server arrangement (8) comprising a plurality of records (401), each record (401) being associated with a client and containing at least the following fields:

- a first data field (402) to identify the record (401);
- a second data field (410) representing a financial account value;
- a third data field (404) to identify a client related to the record (401);
- a fourth data field (406) to identify an external account for the client associated with the third data field (404);

the third data field comprising data related to an e-mail address of said client.

8. A method to be carried out by a server arrangement (8) connected to a network (1), comprising processing means (21) and memory means (18 - 22) connected to the processing means (21); to store in the memory means (18 - 22) a plurality of records (401), each record (401) being associated with a client and containing at least the following fields:

- a first data field (402) to identify the record (401);
- a second data field (410) representing a financial account value;
- a third data field (404) to identify a client related to the record (401);
- a fourth data field (406) to identify an external account for the client associated with the third data field (404);

the third data field comprising data related to an e-mail address of said client, including the following steps:

- to receive via the network (1) a message (M) from a first client having a first electronic mail address;

- to select a first client record (401) based on said received first electronic mail address;
- to withdraw a money value from the financial account value of said first client record's second data field (410), said money value being specified in said message (M);
- to transfer said money value to a second client account as specified in said message (M).

9. A method according to claim 8, characterised by the following step:
- to identify said second client account as a record (401) with a third data field (404) relating to a second electronic mail address of a second client as stored in the message (M).

10. A method according to claim 8, characterised by the following step:
- to identify said second client account as a record (401) with a fourth data field (406) relating to an external account of said first client at a local bank as stored in the message (M).

11. A method according to claim 8, characterised by the following step:
- to identify that said second client account is related to a second client electronic mail address which is not yet related to one of said records (401),
- to automatically create a second client record (401) and
- to transfer said money value to said second client record's second data field (410).

12. A computer program product to be loaded by a server arrangement (8) connected to a network (1), comprising processing means (21) and memory means (18-22) connected to the processing means (21), after being loaded allowing said server arrangement to store in the memory means (18-22) a plurality of records (401), each record (401) being associated with a client and containing at least the following fields:
- a first data field (402) to identify the record (401);
- a second data field (410) representing a financial account value;
- a third data field (404) to identify a client related to the record (401);

- a fourth data field (406) to identify an external account for the client associated with the third data field (404);

the third data field comprising data related to an e-mail address of said client.and allowing said server arrangement to carry out the following steps:

- to receive via the network (1) a message (M) from a first client having a first electronic mail address;
- to select a first client record (401) based on said received first electronic mail address;
- to withdraw a money value from the financial account value of said first client record's second data field (410), said money value being specified in said message (M);
- to transfer said money value to a second client account as specified in said message (M).

13. A data carrier provided with a computer program product as claimed in claim 12.

14. Method of payment including the steps of:

- sending a message (M) to a server (8) via a network (1);
- withdrawing a money value from a financial account value of a first client account, said money value being specified in said message (M);
- transferring said money value to a second client account as specified in said message (M),

at least said first client account being identified by data related to an e-mail address of said first client.

AMENDED CLAIMS

[received by the International Bureau on 09 November 2001 (09.11.01);
original claims 1-14 replaced by new claims 1-17 (5 pages)]

1 A server arrangement (8) connected to a network (1), comprising processing means (21) and memory means (18-22) connected to the processing means (21), the memory means (18-22) comprising a plurality of records (401), each record (401) being associated with a client and containing at least the following fields:

- a first data field (402) to identify the record (401);
- a second data field (410) representing a financial account value;
- a third data field (404) to identify a client related to the record (401), comprising data related to an e-mail address of said client;

characterised in that

each record (401) also contains:

- a fourth data field (406) to identify an external back-to-back account for the client associated with the third data field (404);

and that said server arrangement (8) is arranged to administer each record (401) through said e-mail address in said third data field (404).

2. A server arrangement according to claim 1, wherein said processor means (21) are arranged to carry out the following steps:

- to receive via the network (1) a message (M) from a first client having a first electronic mail address;
- to select a first client record (401) based on said received first electronic mail address;
- to withdraw a money value from the financial account value of said first client record's second data field (410), said money value being specified in said message (M);
- to transfer said money value to a second client account as specified in said message (M).

3. A server arrangement according to claim 2, wherein said message (M) specifies that said second client account is related to a second client electronic mail address as defined in a second client record's third data field (404).

4. A server arrangement according to claim 2, wherein said message (M) specifies that said second client account is a bank account for said first client.

5. A server arrangement according to claim 2, wherein said message (M) specifies that said second client account is related to a second client electronic mail address which is not yet related to one of said records (401), and said processing means are arranged to automatically create a second client record (401) and transfer said money value to said second client record's second data field (410).

6. A server arrangement according to any of the preceding claims, wherein said third data field's data equals said e-mail address of said client.

7. A server arrangement according to any preceding claim, wherein said financial account value in said second data field (410) is expressed in a virtual currency.

8. A data structure for storing data in memory means (18-22) of a server arrangement (8) comprising a plurality of records (401), each record (401) being associated with a client and containing at least the following fields:

- a first data field (402) to identify the record (401);
- a second data field (410) representing a financial account value;
- a third data field (404) to identify a client related to the record (401) , comprising data related to an e-mail address of said client;

characterised in that

each record (401) also contains:

- a fourth data field (406) to identify an external back-to-back account for the client associated with the third data field (404);

and that said server arrangement (8) is arranged to administer each record (401) through said e-mail address in said third data field (404).

9. A method to be carried out by a server arrangement (8) connected to a network (1), comprising processing means (21) and memory means (18 - 22) connected to the processing means (21); to store in the memory means (18 - 22) a plurality of records (401), each record (401) being associated with a client and containing at least the following fields:

- a first data field (402) to identify the record (401);
- a second data field (410) representing a financial account value;
- a third data field (404) to identify a client related to the record (401), comprising data related to an e-mail address of said client;

characterised in that

each record (401) also contains a fourth data field (406) to identify an external back-to-back account for the client associated with the third data field (404);

and said method including the following step:

- to administer each record (401) through said e-mail address in said third data field (404).

10. A method according to claim 9, characterised by the following steps:

- to receive via the network (1) a message (M) from a first client having a first electronic mail address;
- to select a first client record (401) based on said received first electronic mail address;
- to withdraw a money value from the financial account value of said first client record's second data field (410), said money value being specified in said message (M);
- to transfer said money value to a second client account as specified in said message (M).

11. A method according to claim 9, characterised by the following step:

- to identify said second client account as a record (401) with a third data field (404) relating to a second electronic mail address of a second client as stored in the message (M).

12. A method according to claim 9, characterised by the following step:

- to identify said second client account as a record (401) with a fourth data field (406) relating to an external account of said first client at a local bank as stored in the message (M).

13. A method according to claim 9, characterised by the following step:
- to identify that said second client account is related to a second client electronic mail address which is not yet related to one of said records (401),
- to automatically create a second client record (401) and
- to transfer said money value to said second client record's second data field (410).

14. A computer program product to be loaded by a server arrangement (8) connected to a network (1), comprising processing means (21) and memory means (18-22) connected to the processing means (21), after being loaded allowing said server arrangement to store in the memory means (18-22) a plurality of records (401), each record (401) being associated with a client and containing at least the following fields:
- a first data field (402) to identify the record (401);
- a second data field (410) representing a financial account value;
- a third data field (404) to identify a client related to the record (401) , comprising data related to an e-mail address of said client;

characterised in that
each record (401) also contains a fourth data field (406) to identify an external back-to-back account for the client associated with the third data field (404);
and after being loaded, said computer program product allows said server arrangement to carry out the following step:
- to administer each record (401) through said e-mail address in said third data field (404).

15. A computer program product to be loaded by a server arrangement (8) according to claim 14, characterised in that, after being loaded, said computer program product allowing said server arrangement to carry out the following steps:

- to receive via the network (1) a message (M) from a first client having a first electronic mail address;
- to select a first client record (401) based on said received first electronic mail address;
- to withdraw a money value from the financial account value of said first client record's second data field (410), said money value being specified in said message (M);
- to transfer said money value to a second client account as specified in said message (M).

16. A data carrier provided with a computer program product as claimed in claim 15.

17. Method of payment including the steps of:

- sending a message (M) to a server (8) via a network (1);
- withdrawing a money value from a financial account value of a first client account, said money value being specified in said message (M);
- transferring said money value to a second client account as specified in said message (M),

at least said record of said first client account being administered through said e-mail address in said third data field (404) of said record of said first client.

Fig 1

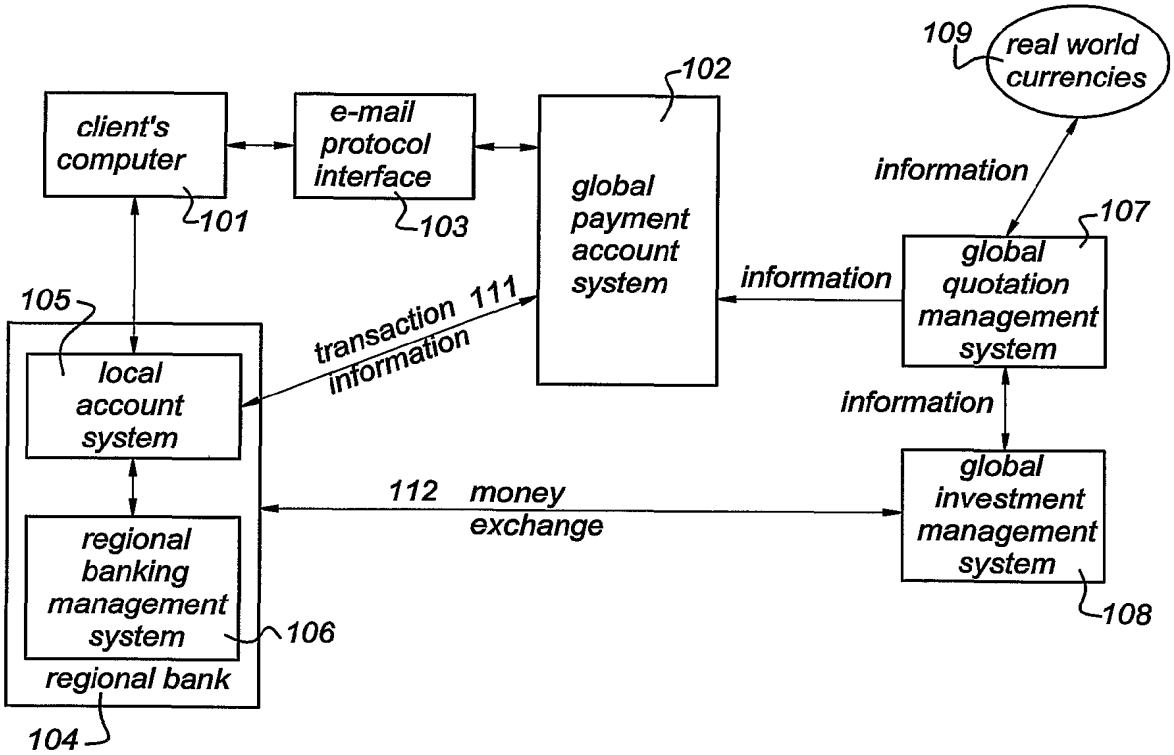

109
real world currencies
102
client's computer
101
e-mail protocol interface
103
global payment account system
information
107
global quotation management system
information
105
transaction information
111
local account system
information
112 money exchange
global investment management system
108
regional banking management system
106
regional bank
104

Fig 2

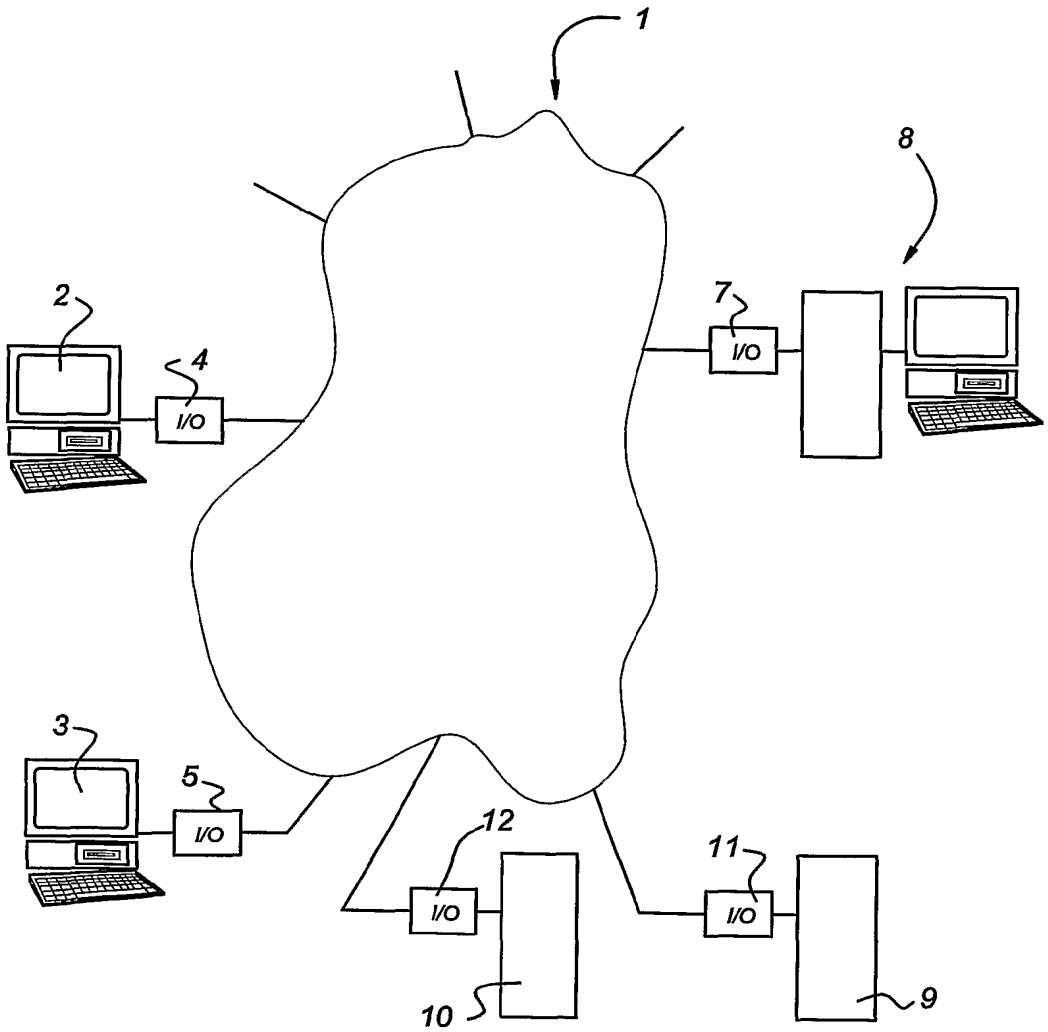


Fig 3

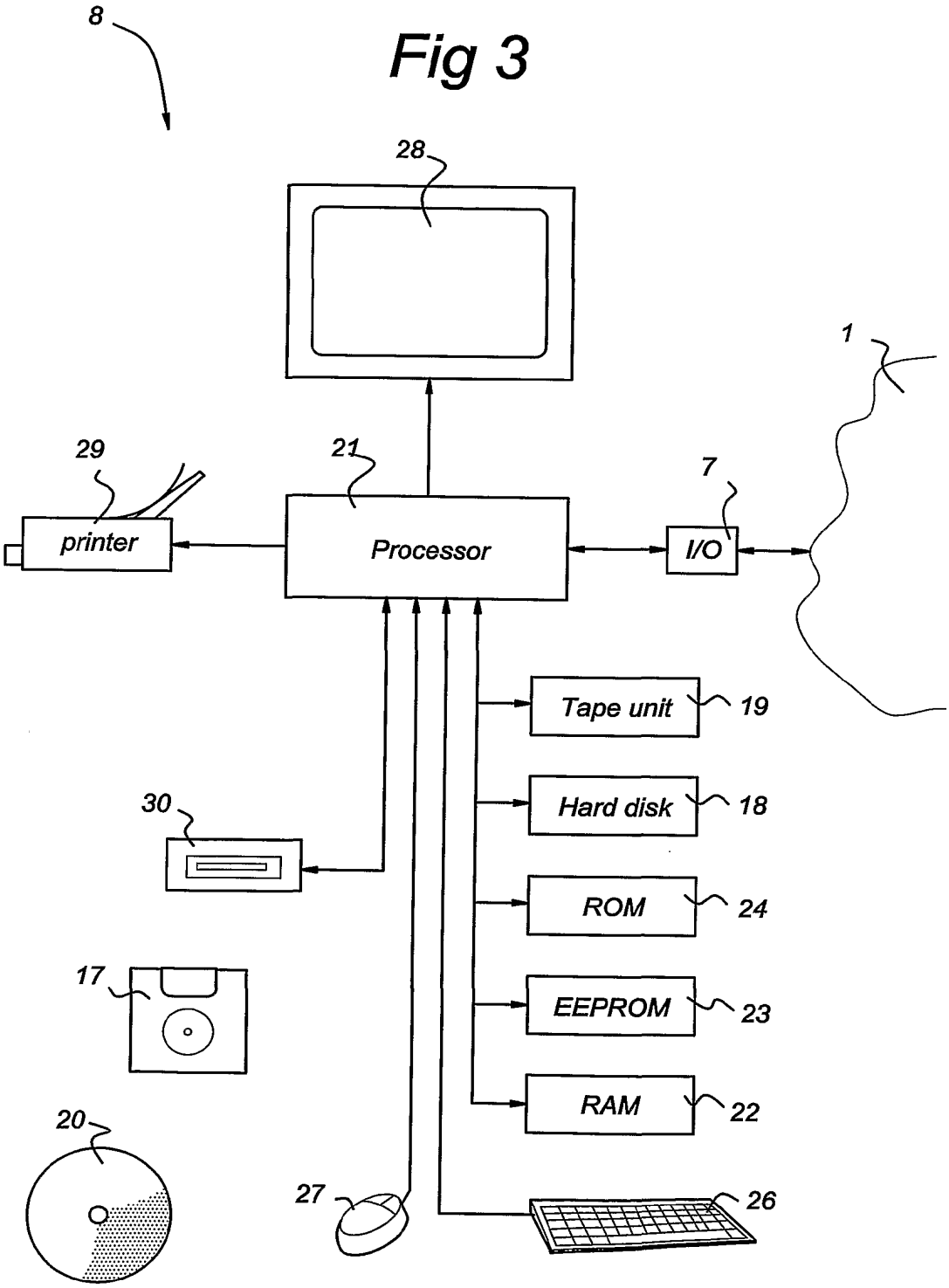

8
28
1
29
21
7
printer
Processor
I/O
Tape unit
19
30
Hard disk
18
ROM
24
17
EEPROM
23
RAM
22
20
27
26

Fig 4

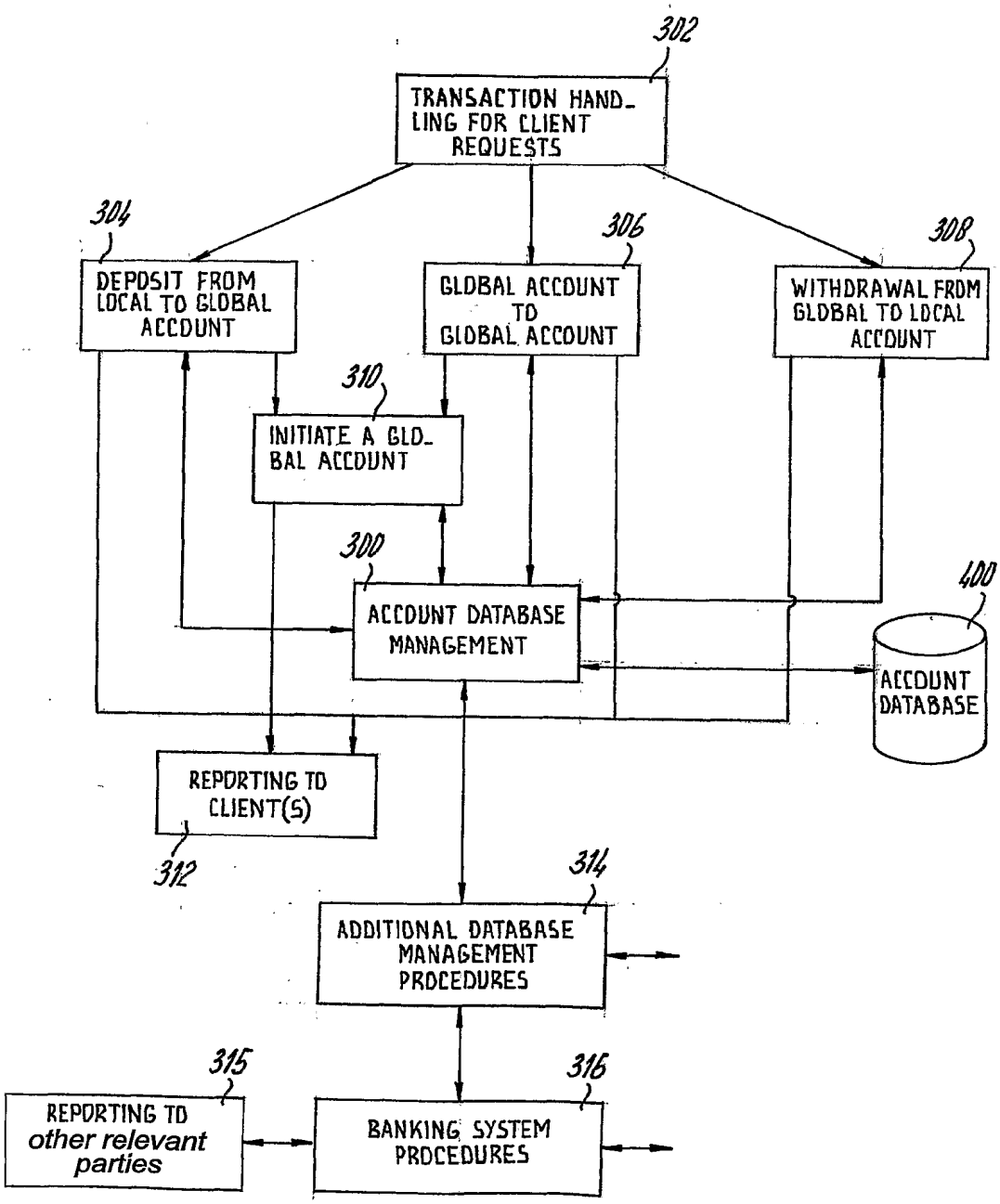

302
TRANSACTION HANDLING FOR CLIENT REQUESTS
304
DEPOSIT FROM LOCAL TO GLOBAL ACCOUNT
306
GLOBAL ACCOUNT TO GLOBAL ACCOUNT
308
WITHDRAWAL FROM GLOBAL TO LOCAL ACCOUNT
310
INITIATE A GLOBAL ACCOUNT
300
ACCOUNT DATABASE MANAGEMENT
400
ACCOUNT DATABASE
REPORTING TO CLIENT(S)
312
314
ADDITIONAL DATABASE MANAGEMENT PROCEDURES
315
REPORTING TO other relevant parties
316
BANKING SYSTEM PROCEDURES

Fig 5

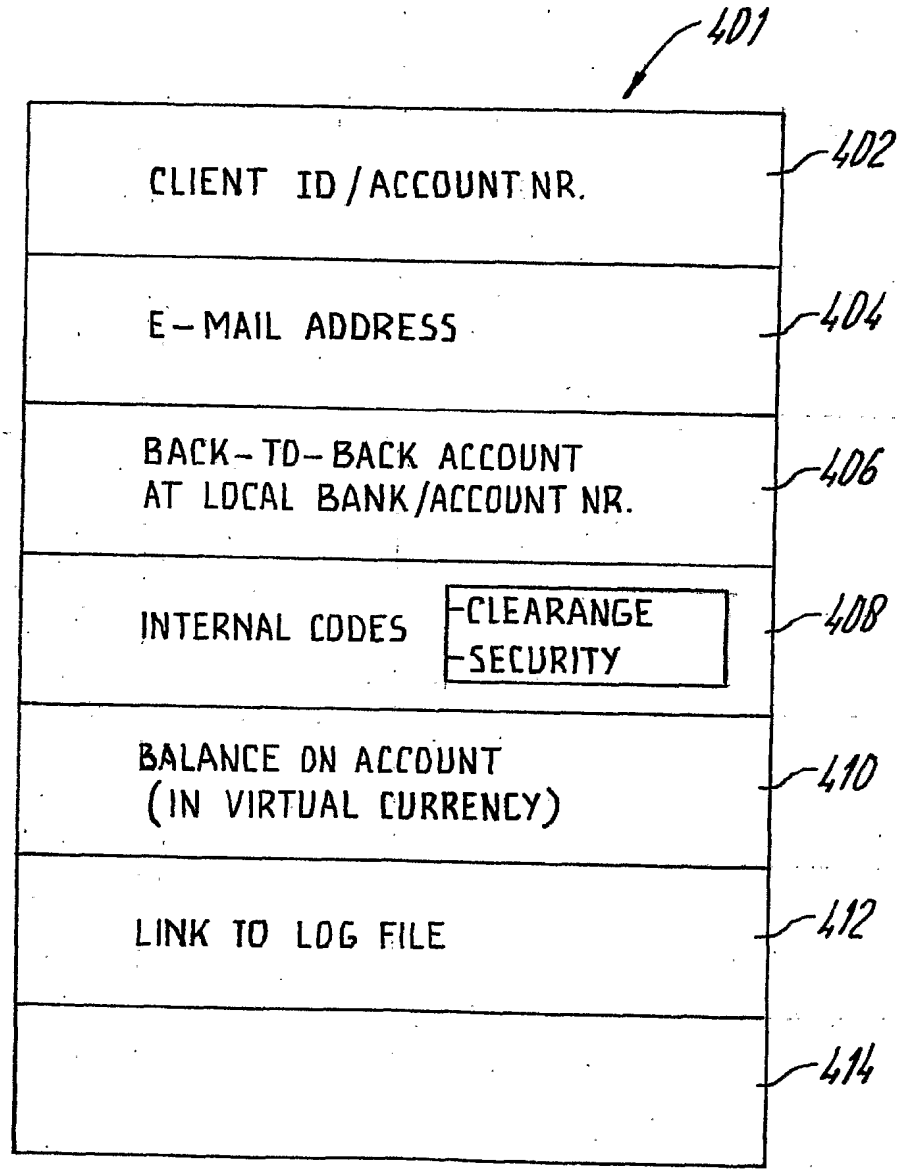

401
CLIENT ID / ACCOUNT NR.
402
E-MAIL ADDRESS
404
BACK-TO-BACK ACCOUNT AT LOCAL BANK/ACCOUNT NR.
406
INTERNAL CODES
-CLEARANCE
-SECURITY
408
BALANCE ON ACCOUNT (IN VIRTUAL CURRENCY)
410
LINK TO LOG FILE
412
414

Fig 6

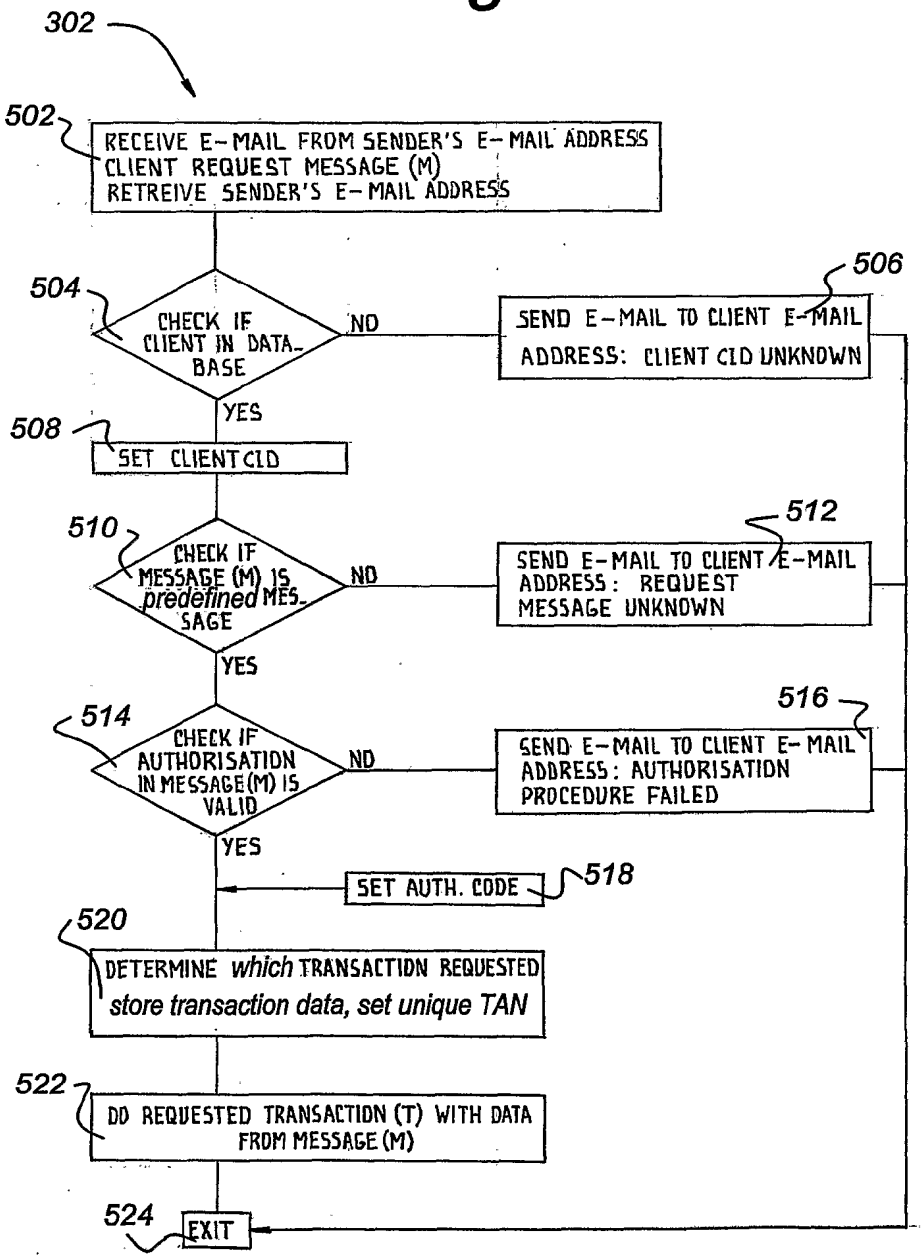

302
502
RECEIVE E-MAIL FROM SENDER'S E-MAIL ADDRESS
CLIENT REQUEST MESSAGE (M)
RETREIVE SENDER'S E-MAIL ADDRESS
504
CHECK IF CLIENT IN DATA-BASE
NO
506
SEND E-MAIL TO CLIENT E-MAIL ADDRESS: CLIENT CID UNKNOWN
YES
508
SET CLIENT CID
510
CHECK IF MESSAGE (M) IS predefined MES-SAGE
NO
512
SEND E-MAIL TO CLIENT E-MAIL ADDRESS: REQUEST MESSAGE UNKNOWN
YES
514
CHECK IF AUTHORISATION IN MESSAGE (M) IS VALID
NO
516
SEND E-MAIL TO CLIENT E-MAIL ADDRESS: AUTHORISATION PROCEDURE FAILED
YES
SET AUTH. CODE
518
520
DETERMINE which TRANSACTION REQUESTED
store transaction data, set unique TAN
522
DO REQUESTED TRANSACTION (T) WITH DATA FROM MESSAGE (M)
524
EXIT

Fig 7

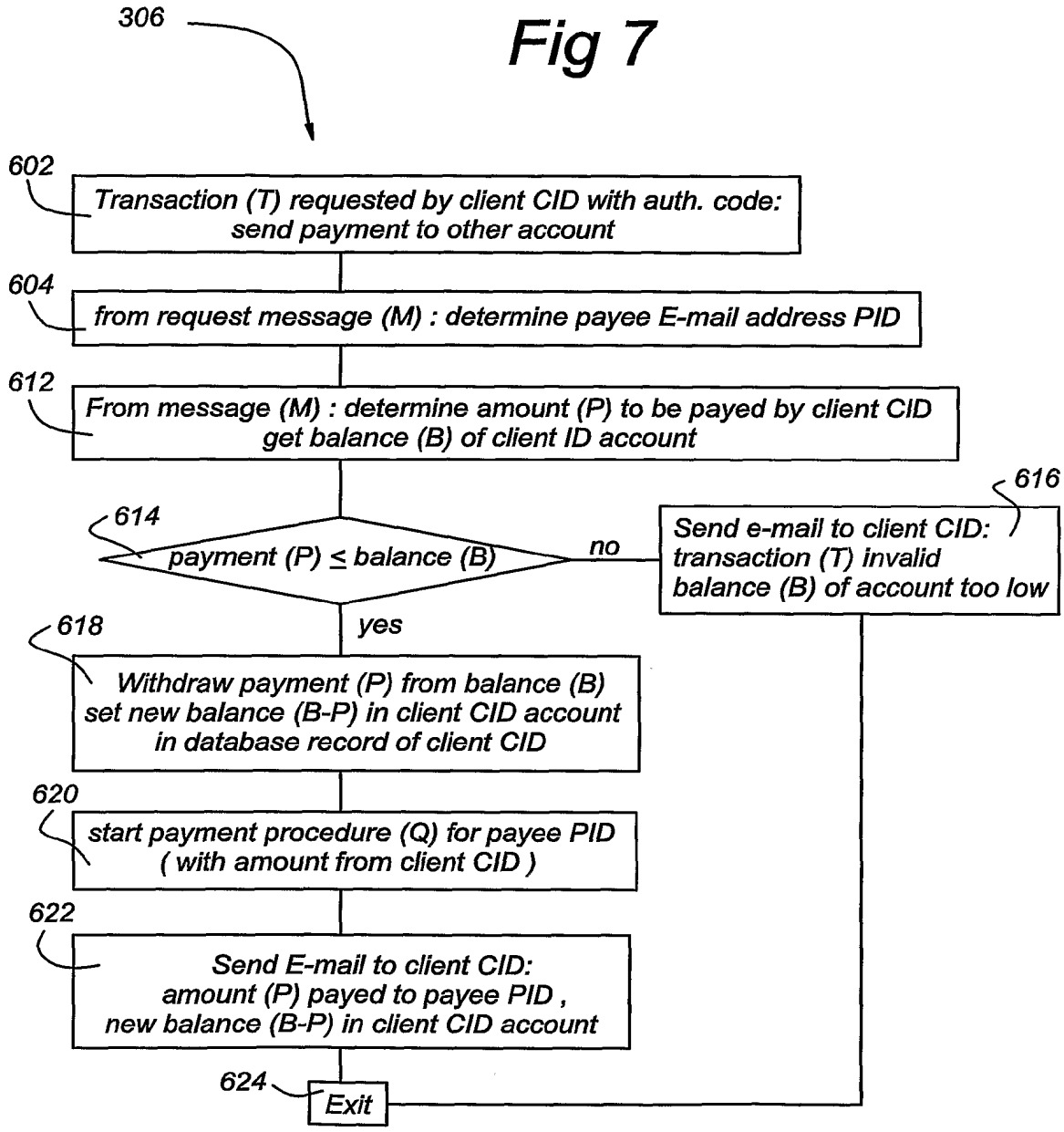

306
602
Transaction (T) requested by client CID with auth. code:
send payment to other account
604
from request message (M) : determine payee E-mail address PID
612
From message (M) : determine amount (P) to be payed by client CID
get balance (B) of client ID account
614
payment (P) ≤ balance (B)
no
616
Send e-mail to client CID:
transaction (T) invalid
balance (B) of account too low
yes
618
Withdraw payment (P) from balance (B)
set new balance (B-P) in client CID account
in database record of client CID
620
start payment procedure (Q) for payee PID
(with amount from client CID)
622
Send E-mail to client CID:
amount (P) payed to payee PID ,
new balance (B-P) in client CID account
624
Exit

Fig 8

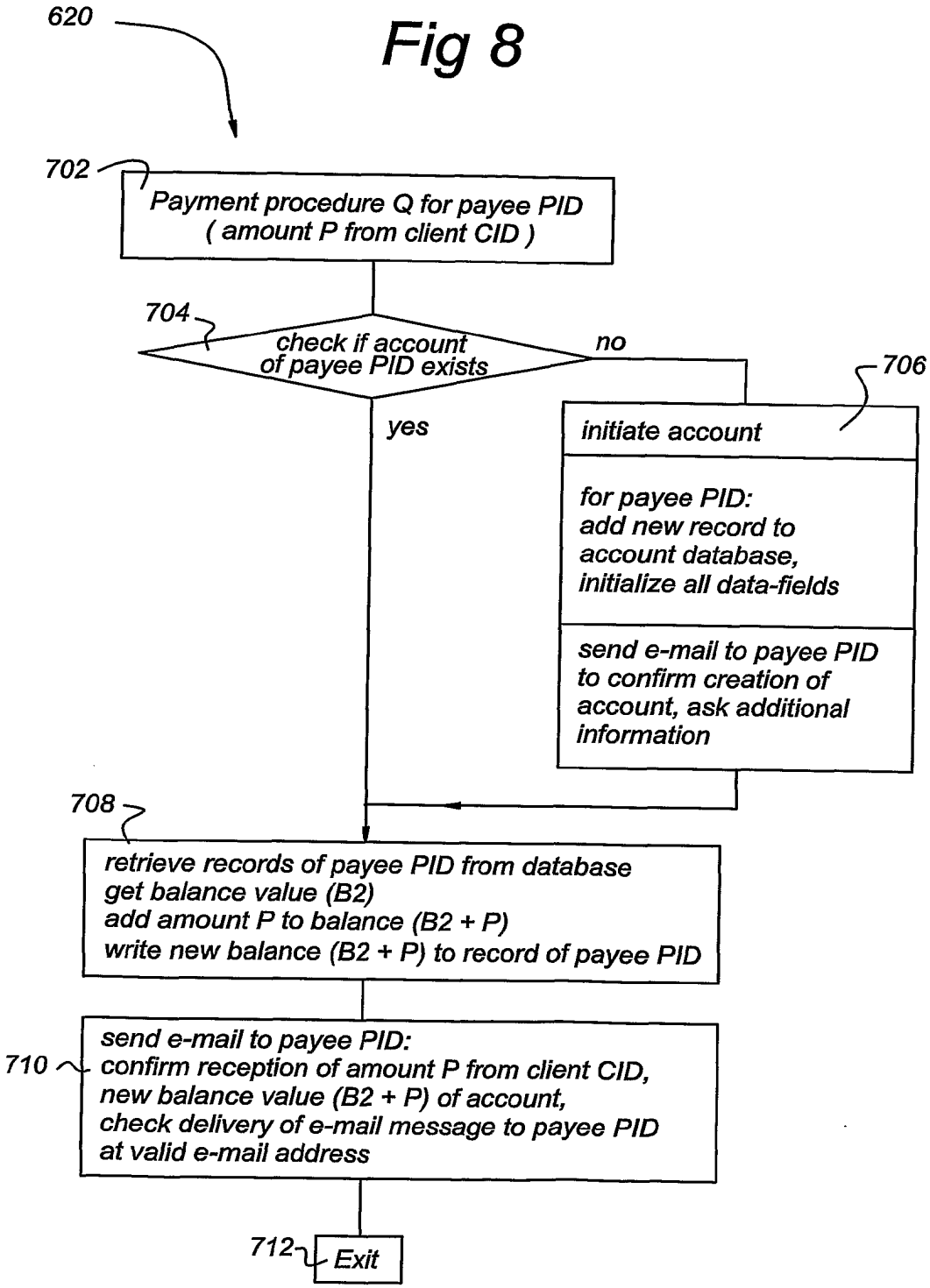
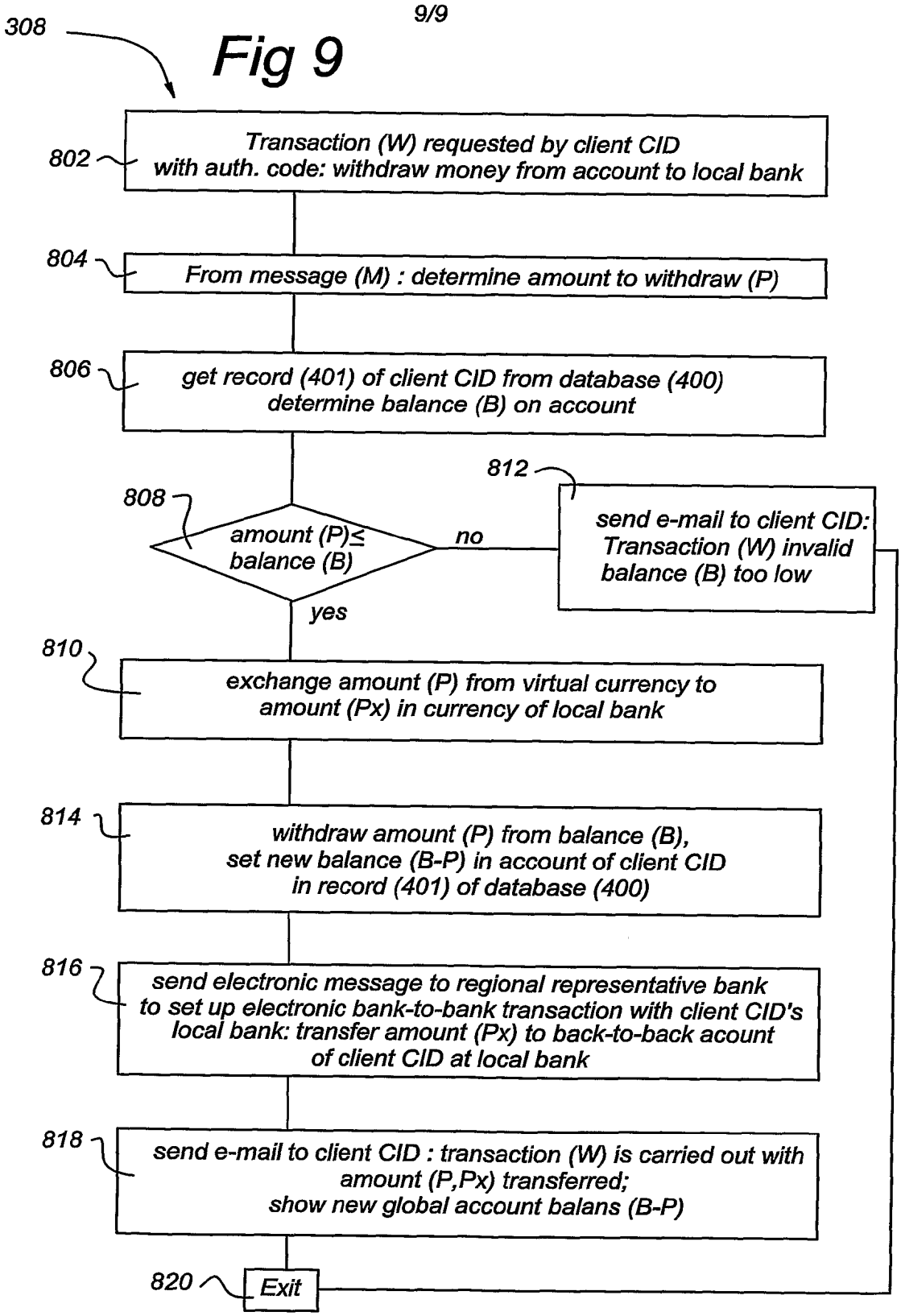

620
702
Payment procedure Q for payee PID
(amount P from client CID)
704
check if account
of payee PID exists
no
yes
706
initiate account
for payee PID:
add new record to
account database,
initialize all data-fields
send e-mail to payee PID
to confirm creation of
account, ask additional
information
708
retrieve records of payee PID from database
get balance value (B2)
add amount P to balance (B2 + P)
write new balance (B2 + P) to record of payee PID
710
send e-mail to payee PID:
confirm reception of amount P from client CID,
new balance value (B2 + P) of account,
check delivery of e-mail message to payee PID
at valid e-mail address
712
Exit

Fig 9


308
802
Transaction (W) requested by client CID with auth. code: withdraw money from account to local bank
804
From message (M) : determine amount to withdraw (P)
806
get record (401) of client CID from database (400) determine balance (B) on account
808
amount (P)≤ balance (B)
no
812
send e-mail to client CID: Transaction (W) invalid balance (B) too low
yes
810
exchange amount (P) from virtual currency to amount (Px) in currency of local bank
814
withdraw amount (P) from balance (B), set new balance (B-P) in account of client CID in record (401) of database (400)
816
send electronic message to regional representative bank to set up electronic bank-to-bank transaction with client CID's local bank: transfer amount (Px) to back-to-back acount of client CID at local bank
818
send e-mail to client CID : transaction (W) is carried out with amount (P,Px) transferred; show new global account balans (B-P)
820
Exit

INTERNATIONAL SEARCH REPORT

onal Application No
PCT/NL 00/00486

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G07F7/10 G07F19/00 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G07F G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 31965 A (ANDERSON MILTON M ;FINANCIAL SERVICES TECHNOLOGY (US); JAFFE FRANK) 10 October 1996 (1996-10-10) page 19, line 23 - line 35 page 30, line 33 -page 31, line 12 ---	1,7,14
X	US 5 956 699 A (ANDERSON ROY L ET AL) 21 September 1999 (1999-09-21) column 5, line 7 - line 33 column 6, line 27 - line 43 ---	1,6,7
A	EP 0 986 275 A (SWISSCOM AG) 15 March 2000 (2000-03-15) column 3, paragraph 10 ---	1-14
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☐ Further documents are listed in the continuation of box C.

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